Space Weather Forecast

Issued on Sunday, 03 April 2022 at 13:30 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Risk of Moderate class flares, slight chance of X class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate in the past 24 hours, with two Moderate Class flares originating from the region near the northwest limb where three sunspots are close together. There are now eight sunspot regions on the facing side of the sun, with the most active being the above mentioned. Elsewhere on the disc, two large sunspot regions near south centre disc showed some minor changes through the period. The remaining regions in the east are all small and simple. The long period Moderate Class flare which peaked around 02/1400 UTC gave a coronal mass ejection, but this is considered unlikely to have an Earth-directed component. No other Earth-directed coronal mass ejections have been seen in the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind exhibited the likely waning effects of coronal hole/coronal mass ejection activity throughout the period, gradually declining from elevated to slightly elevated. The interplanetary magnetic field was weak. The important north-south component was also weakly positive and negative throughout. Geomagnetic activity was Quiet to Active (Kp 1-4).

Energetic Particles / Solar Radiation: The solar radiation levels reached S1/Minor Storm levels between 02/2250 UTC, after a Moderate-class flare from the northwestern limb region. Solar radiation levels are now below the S1 threshold but remain a little above normal background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Further Moderate activity is likely through this period with a slight chance of High activity. The risk reduces through the coming four days as the regions near the northwest limb rotate off the visible disc.

Solar Wind / Geomagnetic Activity: Earth is likely experiencing the waning effects of coronal mass ejection/coronal hole high speed stream influence. Solar winds will likely remain slightly elevated through much of Day 1 (03 Apr), easing further into Day 2 (04 Apr). No further coronal mass ejection or coronal hole effects are currently expected through Days 3 and 4 (05-06 Apr), with solar winds forecast to be close to ambient levels. Geomagnetic activity is expected to be Quiet to Active (Kp 1-4) with a slight chance of G1/Minor Storm (Kp 5) intervals through Day 1, easing through Day 2, to become mostly Quiet through Days 3 and 4.

Energetic Particles / Solar Radiation: The solar radiation levels are currently slightly elevated compared to normal background levels, but are on a declining trend and below the S1/Minor Storm threshold. Therefore, the risk of further radiation storms has been lowered significantly and will reduce further through the period as the northwestern sunspot regions rotate well off the disc.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	20	5	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	60	50	40	40
Very Active	R3 to R5 X	No	10	10	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	Yes	15	15	10	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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